



SEQUENCE LISTING<110> Frey, Joachim

Scuber, Katja Thornton, Julian C. Kuzyk, Michael A.
 Burian, Jan <120> Novel Type III Secretion Pathway in Aeromona
 s Salmonicida, and Uses Therefor<130> MIC01/2315/WO<140> PCT/CA01
 /01589<141> 2001-11-15<160> 10 <170> PatentIn version 3.1<210
 > 1<211> 47<212> PRT<213> Aeromonas salmonicida<400> 1

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Asn Ala Ile Glu Arg Glu Glu Asp Glu Leu Ser Gly Glu Ser Ser
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<210> 2<211> 123<212> PRT<213> Aeromonas salmonicida<400> 2

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Ile Thr Ile Gly Asp Asn Pro His Ser Leu Ile Gln Leu Glu Leu Glu
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Gln Ser Gly Thr Leu Gln Leu Glu Arg His Gln Gly Gln Leu Thr Leu
 35 40 45

Trp Leu Ala Arg Ala Val Pro Trp His Gln Ser Gly Glu Ala Ile Arg
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Arg Ala Met Thr Leu Thr Ala Ala Ala Gln Gly Pro Ala Leu Pro Val
 65 70 75 80

Arg Ser Gly Trp Leu Gly Glu Glu Gln Leu Ile Leu Phe Val Ser Leu
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Asp Glu Arg Ala Val Thr Leu Pro Gln Leu His Gln Ala Val Thr Thr
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Leu Thr Arg Leu Gln Arg Glu Val Leu Ala Ser
 115 120

<210> 3<211> 121<212> PRT<213> Aeromonas salmonicida<400> 3

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Ile Ser Leu Asp Asp Gln Glu Arg Ser Leu Pro Gly Arg Tyr Ala Leu
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Leu Pro Asp Gly Gln Ser Ile Glu Pro His Ile Ser Arg Leu Tyr Pro
 35 40 45

Glu Arg Leu Ala Asp Arg Val Leu Leu Asp Phe Ala Thr Pro Asp Arg
 50 55 60

Gly Phe His Asp Leu Leu Arg Pro Val Asp Phe Asn Gln Ala Met Gln
 65 70 75 80

Gly Leu Arg Ser Val Leu Ala Glu Gly Gln Ser Pro Glu Leu Arg Ala
 85 90 95

Ala Ala Ala Leu Leu Glu Gln Met His Ala Asp Glu Gln Leu Met Gln
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Met Thr Leu His Leu Leu His Lys Val
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<210> 4<211> 116<212> PRT<213> Aeromonas salmonicida<400> 4

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Gly Trp Leu Gln Leu Gln Tyr Gly His Pro Asp Lys Ala Ser Val Leu
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Leu Ala Ala Leu Leu Gln Ile His Pro Asp His Gln Gly Gly Arg Arg
 35 40 45

Thr Leu Leu Val Ala Leu Leu Lys Gln Gly Glu Gly Glu Ala Ala Leu
 50 55 60

Ala His Val Asp Gln Leu Met Gln Gln Gly Glu Ala Asp Gly Pro Leu
 65 70 75 80

Trp Leu Cys Arg Ser Arg Ala Cys Gln Leu Ala Gly Arg Leu Asp Glu
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Ala Arg Phe Ala Tyr Gln Gln Tyr Leu Glu Leu Glu Glu Gln Asn Glu
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Ser Thr His Pro
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Leu Pro Leu Pro Pro Val Ala Leu Asp Ile Leu Ile Ala Ile Asn Met
 35 40 45

Thr Ile Ser Val Val Leu Leu Met Met Ala Val Tyr Ile Asn Ser Pro
 50 55 60

Leu Gln Phe Ser Ala Phe Pro Ala Val Leu Leu Ile Thr Thr Leu Phe
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Arg Leu Ala Leu Ser Val Ser Thr Thr Arg Met Ile Leu Leu Gln Ala

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90

95

Asp Ala Gly Gln Ile Val Tyr Thr Phe Gly Asn Phe Val Val Gly Gly
 100 105 110

Asn Leu Val Val Gly Ile Val Ile Phe Leu Ile Ile Thr Ile Val Gln
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Phe Leu Val Ile Thr Lys Gly Ser Glu Arg Val Ala Glu Val Ser Ala
 130 135 140

Arg Phe Ser Leu Asp Ala Met Pro Gly Lys Gln Met Ser Ile Asp Gly
 145 150 155 160

Asp Met Arg Ala Gly Val Ile Asp Val His Glu Ala Arg Asp Arg Arg
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Gly Val Ile Glu Lys Glu Ser Gln Met Phe Gly Ser Met Asp Gly Ala
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Met Lys Phe Val Lys Gly Asp Ala Ile Ala Gly Leu Ile Ile Ile Phe
 195 200 205

Val Asn Ile Leu Gly Gly Val Thr Ile Gly Val Thr Gln Lys Gly Leu
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Ser Ala Ala Asp Ala Leu Gln Leu Tyr Ser Ile Leu Thr Val Gly Asp
 225 230 235 240

Gly Met Val Ser Gln Val Pro Ala Leu Leu Ile Ala Ile Thr Ala Gly
 245 250 255

Ile Ile Val Thr Arg Val Ser Ser Glu Glu Ser Ser Asp Leu Gly Thr
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Asp Ile Gly Ala Gln Val Val Ala Gln Pro Lys Ala Leu Leu Ile Gly

275

280

285

Gly Leu Leu Leu Val Leu Phe Gly Leu Ile Pro Gly Phe Pro Met Ile
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Thr Phe Phe Ala Leu Ser Ala Ile Val Thr Ala Gly Gly Tyr Phe Ile
 305 310 315 320

Gly Leu Arg Gln Arg Lys Ala Gln Ser Ser Asn Ser Gln Asp Leu Pro
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Ala Val Leu Ala Gln Gly Ala Gly Ala Pro Ala Ala Arg Ser Lys Pro
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Lys Pro Gly Ser Lys Pro Arg Gly Lys Leu Gly Glu Lys Glu Glu Phe
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Ala Met Thr Val Pro Leu Leu Ile Asp Val Asp Ala Ala Leu Gln Ala
 370 375 380

Glu Leu Glu Ala Ile Ala Leu Asn Asp Glu Leu Val Arg Val Arg Arg
 385 390 395 400

Ala Leu Tyr Leu Asp Leu Gly Val Pro Phe Pro Gly Ile His Leu Arg
 405 410 415

Phe Asn Glu Gly Met Gly Pro Gly Glu Tyr Leu Ile Gln Leu Gln Glu
 420 425 430

Val Pro Val Ala Arg Gly Leu Leu Arg Pro Gly His Gln Leu Val Gln
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Glu Ser Ala Ser Gln Leu Asp Leu Leu Gly Ile Pro Tyr Glu Glu Gly
 450 455 460

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Val Met Thr Trp His Leu Ser His Val Leu Arg Glu Tyr Ala Glu Asp						
	500			505		510
Phe Ile Gly Ile Gln Glu Thr Arg Tyr Leu Leu Glu Gln Met Glu Gly						
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Ser Tyr Ser Glu Leu Val Lys Glu Ala Gln Arg Ile Ile Pro Leu Gln						
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Arg Met Thr Glu Ile Leu Gln Arg Leu Val Gly Glu Asp Ile Ser Ile						
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						560
Arg Asn Met Arg Ala Ile Leu Glu Ala Met Val Glu Trp Gly Gln Lys						
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						575
Glu Lys Asp Val Val Gln Leu Thr Glu Tyr Ile Arg Ser Ser Leu Lys						
				580		585
						590
Arg Tyr Ile Cys Tyr Lys Tyr Ala Asn Gly Asn Asn Ile Leu Pro Ala						
	595			600		605
Tyr Leu Leu Asp Gln Gln Val Glu Glu Gln Leu Arg Gly Gly Ile Arg						
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Gln Thr Ser Ala Gly Ser Tyr Leu Ala Leu Asp Pro Thr Ile Thr Gln						
	625			630		635
						640
Ser Phe Leu Asp Gln Val Arg His Thr Val Gly Asp Leu Ala Gln Met						
				645		650
						655
Gln Asn Lys Pro Val Leu Ile Val Ser Met Asp Ile Arg Arg Tyr Val						

660

665

670

Arg Lys Leu Ile Glu Gly Asp Tyr His Ala Leu Pro Val Leu Ser Tyr
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Gln Glu Leu Thr Gln Gln Ile Asn Ile Gln Pro Leu Gly Arg Val Cys
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Leu
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Ala Ala Leu Tyr Leu Leu Ala Glu Ala Thr Leu Ala Val Leu Gly Pro
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Gly His Phe Leu Tyr Gly Asn Val Asp Val Phe Arg Ser Ser Ser Leu
 35 40 45

Ser Ser Glu Arg Leu Gly Arg Phe Tyr Leu Arg Trp Thr Gly Ala Ser
 50 55 60

Glu Pro Glu Pro Gly Trp Phe Met Leu Ala Thr Glu Gln Val Cys Ser
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Leu Arg Asp Met Arg Lys Arg Gln Lys His Gly Leu Ala
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<210> 7<211> 94<212> PRT<213> Aeromonas salmonicida<400> 7

Met Lys Gln Pro Arg Phe Ala Asp His Ser Glu Thr Ile Ser Gln Ala
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Glu His Gly Ile Ala Asp Ser Asp His Arg Asn Ala Leu Leu Gln Glu

20

25

30

Met Leu Ala Gly Leu Ala Leu Ser Asp Gln Thr Cys Gln Leu Leu Phe
 35 40 45

Glu Ala Pro Thr Glu Gln Val Ala Val Ala Glu Gln Glu Leu Leu Ala
 50 55 60

Glu Ile Gln Arg Arg Gln Ala Leu Leu Pro Ala Gln Pro Gly Glu Gly
 65 70 75 80

Arg Lys Ser Arg Arg Pro Thr Ile Met Arg Gly Leu Met Ile
 85 90

<210> 8<211> 361<212> PRT<213> Aeromonas salmonicida<400> 8

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Trp Leu Asp Val Gln Ala Leu Asn Thr Leu Pro Gly Asn Lys Asn Pro
 20 25 30

Lys Leu Thr Glu Leu Val Glu Leu Leu Lys Gly Lys Ile Thr Ile Ser
 35 40 45

Ala Asp Ser Ser Thr Ala Leu Ser Lys Glu Gln Leu Glu Lys Leu Leu
 50 55 60

Ala Ala Tyr Leu Thr Asp Pro Ala Ser Ile Asn Gly Gly Trp Ala Met
 65 70 75 80

Gly Gln Phe Lys Gly Gly Gln Asp Ala Ala Ile Ala Ala Ile Lys Gly
 85 90 95

Val Ile Glu Arg Gly Ala Lys Gln Thr Pro Pro Val Thr His Trp Thr
 100 105 110

Ile Pro Glu Phe Met Leu Leu Ser Leu Ser Ala Leu Thr Met Glu Arg
 115 120 125

Thr Asp Asp Asp Leu Ile Thr Thr Phe Thr Gly Val Met Met Phe Gln
 130 135 140

Asp Asn Gln Arg Lys Gly Leu Arg Asp Glu Leu Ala Glu Met Thr Ala
 145 150 155 160

Glu Leu Lys Ile Tyr Gly Val Ile Gln Ser Glu Ile Asn Gln Val Leu
 165 170 175

Ser Ala Ala Ser Asn Gln Thr Phe Lys Thr Asn Phe Asn Leu Met Asp
 180 185 190

Tyr Lys Leu Tyr Gly Tyr Glu Ser Leu Ala Lys Phe Met Glu Gly Gly
 195 200 205

Glu Phe Lys Leu Leu Ser Lys Met Phe Ser Asp Glu Gln Val Thr Lys
 210 215 220

Ala Gln Gln Asp Phe Thr Asn Ala Lys Asn Glu Leu Glu Asn Val Thr
 225 230 235 240

Ser Thr Ser Leu Asn Pro Lys Ile Gln Ala Glu Ala Lys Thr Asp Tyr
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Glu Arg Lys Lys Ala Ile Phe Glu Glu Ile Val Glu Thr Gln Ile Ile
 260 265 270

Thr Leu Lys Thr Phe Leu Glu Ser Asp Leu Lys Lys Ser Gly Ala Met
 275 280 285

Ser Gly Ile Glu Ala Glu Tyr Lys Tyr Asp Lys Asp Asn Asn Lys Leu
 290 295 300

Gly Asn Phe Ser Thr Ser Val Ser Asp Arg Ser Arg Pro Leu Asn Asp
 305 310 315 320

Leu Val Ser Glu Lys Thr Ala Arg Leu Asn Asp Val Ser Ser Arg Tyr
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Ile Met Arg Asp Ile Leu Gly Ala Ile
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Gly Asp Thr Leu Glu Gln Leu Tyr Ala Leu Ala Phe Ser Gln Tyr Gln
 35 40 45

Ala Gly Lys Trp Glu Asp Ala His Lys Ile Phe Gln Ala Leu Cys Met
 50 55 60

Leu Asp His Tyr Glu Pro Arg Tyr Phe Leu Gly Leu Gly Ala Cys Arg
 65 70 75 80

Gln Ala Met Gly Glu Phe Glu Thr Ala Val Gln Ser Tyr Ser Phe Gly
 85 90 95

Ala Met Leu Asp Leu Lys Asp Pro Arg Phe Pro Phe His Ala Gly Glu
 100 105 110

Cys Arg Leu Gln Gln Gly Asp Leu Asn Gly Ala Glu Ser Gly Phe His

115

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Ser Ala Arg Leu Leu Ala Asp Thr Asp Pro Gln Gln Ala Asp Leu Ala
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